

**CLAIMS**

Therefore, the following is claimed:

1           1.     A system for blocking leakage signals in a communication system,  
2     comprising:  
3           a detector configured to detect when a first communication connection is out-of-  
4     service;  
5           a switch coupled to said first communication connection;  
6           an actuator configured to actuate said switch; and  
7           a filter disposed between said switch and a communication device, said filter  
8     configured to prevent at least one leakage signal from propagating from said first  
9     communication connection to a second communication connection coupled to said  
10    communication device,  
11    wherein said actuator actuates said switch so that said first communication connection is  
12    uncoupled from said filter when said detector detects that said first communication  
13    connection is out-of-service.

1           2.     The system of claim 1, further comprising an impedance element and a  
2     coupler, such that when said first communication connection is uncoupled from said  
3     filter, said coupler couples said impedance element to said communication device such  
4     that a system impedance element seen by said communication device is substantially the  
5     same when said first communication connection is coupled to said switch and when said  
6     impedance element is coupled to said communication device.

1           3.     The system of claim 2, further comprising a second switch, said second  
2     switch configured to uncouple said filter from said communication device when said  
3     detector detects that said first communication connection is not in service.

1           4.     The system of claim 1, wherein said communications connection is a  
2     digital subscriber loop.

1           5.     A system which blocks leakage signals in a communication system  
2     comprising:

3           a local communication device configured to transmit and receive a plurality of  
4     signals with a plurality of remote communication devices, said local communication  
5     device coupled to said plurality of remote communication devices by a plurality of  
6     communication connections, each of said plurality of communication connections is  
7     associated with one of said plurality of remote communication devices, respectively; and

8           a filter coupled to a first communication connection of said plurality of  
9     communication connections and said local communication device, and configured to  
10    prevent at least one leakage signal from propagating from said first communication  
11    connection to a second communication connection of said plurality of communication  
12    connections.

1           6.     The system of claim 5, wherein said local communication device time  
2     multiplexes each one of said plurality of signals onto a single channel.

1           7.     The system of claim 5, wherein said local communication device  
2 frequency multiplexes each one of said plurality of signals onto one of a plurality of  
3 channels.

1           8.     The system of claim 5, wherein at least one of said plurality of  
2 communication connections is a digital subscriber loop.

1           9.     A system for blocking leakage signals and uncoupling connections in a  
2 communication system, comprising:

3                 means for detecting service on a first communication connection;

4                 means for blocking a leakage signal such that said blocking means prevents said  
5 leakage signal from propagating from said first communication connection to a second  
6 communication connection coupled to a communication device; and

7                 means for coupling said blocking means to said first communication connection  
8 and said communication device such that said coupling means uncouples said first  
9 communication connection from said blocking means in response to detection by said  
10 detecting means that said first communication connection is not in service.

1           10.    The system of claim 9, wherein said coupling means also uncouples said  
2 blocking means from said communication device when said detecting means detects that  
3 said first communication connection is not in service.

1           11.    The system of claim 9, wherein said detecting means further comprises a  
2   means for detecting a voltage on said communication connection, such that said voltage  
3   on said communication connection indicates service on said communication connection.

1           12.    The system of claim 9, further including:  
2           means for matching impedance; and  
3           means for connecting, wherein said connecting means connects said matching  
4   impedance means to said communication device when said detecting means detects that  
5   said first communication connection is not in service, such that a system impedance seen  
6   by said communication device is substantially the same when said blocking means is  
7   coupled to said communication device and when said impedance matching means is  
8   connected to said communication device.

1           13.    The system of claim 9, wherein said first communication connection is a  
2   subscriber loop and said second communication connection is a subscriber loop.

1           14.    The system of claim 9, wherein said communicating means further  
2   includes a means for time multiplexing each one of said plurality of signals onto a single  
3   channel.

1           15.    The system of claim 9, wherein said communicating means further  
2   includes a means for frequency multiplexing each one of said plurality of signals onto  
3   one of a plurality of channels.

1           16.    A method for blocking leakage signals and uncoupling connections in a  
2   communication system, the method comprising the steps of:

3           blocking a leakage signal from propagating from a first communication  
4   connection coupled to said communication device to a second communication connection  
5   coupled to said communication device;

6           detecting a change from an in-service condition to an out-service condition on  
7   said first communication connection; and

8           uncoupling said first communication connection from said communication device  
9   in response to detecting a change to an out-of-service condition.

1           17.    The method of claim 16, wherein said blocking step is effected by a filter.

1           18.    The method of claim 17, further comprising the step of coupling said filter  
2   between said first communication connection and said communication device when said  
3   first communication connection is in an in-service condition.

1           19.    The method of claim 18, further comprising the step of uncoupling said  
2   filter from said first communication connection and said communication device in  
3   response to detecting a change to an out-of-service condition.

1           20.    The method of claim 16, wherein said step of detecting detects a voltage  
2   on said first communication connection, said voltage indicative of said in-service  
3   condition indicates service on said first communication connection.

1           21.    The method of claim 16, further including the step of connecting an  
2   impedance to said communication device when said step of uncoupling uncouples said  
3   first communication connection from said communication device, such that a system  
4   impedance seen by said communication device is substantially the same when said first  
5   communication connection is coupled to said communication device and when said  
6   impedance is connected to said communication device.

1           22.    A system for blocking leakage signals in a communication system,  
2    comprising:  
3           a communication device;  
4           a detector configured to detect if a first communication connection is in an out-of-  
5    service condition;  
6           a switch coupled to said first communication connection;  
7           an actuator configured to actuate said switch; and  
8           a filter disposed between a first communication connection and said  
9    communication device, said filter preventing at least one leakage signal from propagating  
10   from said first communication connection to a second communication connection  
11   coupled to said communication device,  
12   wherein said actuator actuates said switch to uncouple said first communication  
13   connection from said filter when said detector detects that said first communication  
14   connection is in said out-of-service condition.

1           23.    The system of claim 22, wherein said communication device is a signal  
2    multiplexing communication device.

1           24.    A system for blocking leakage signals and uncoupling connections,  
2    comprising:

3           means for communicating a plurality of signals to a plurality of remote  
4    communication devices, said communicating means is coupled to said plurality of remote  
5    communication devices by a plurality of communication connections, each of said  
6    plurality of communication connections is associated with one of said plurality of remote  
7    communication devices, respectively;

8           means for detecting service on a first communication connection;

9           means for blocking a leakage signal such that said blocking means prevents said  
10   leakage signal from propagating from said first communication connection to a second  
11   communication connection coupled to a communication device; and

12          means for coupling said blocking means between said first communication  
13   connection and said communication device such that said coupling means uncouples said  
14   first communication connection from said blocking means when said detecting means  
15   detects that said first communication connection is not in service.